1.0 TITLE AND APPROVAL PAGE

Document Title:
Grant #2B-96112101-0
MEDEP Brownfields Site-Specific Quality Assurance Project Plan
144 Montello Street Property, Lewiston, Maine

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2.0 PROJECT ORGANIZATION AND RESPONSIBILITY FLOW CHART

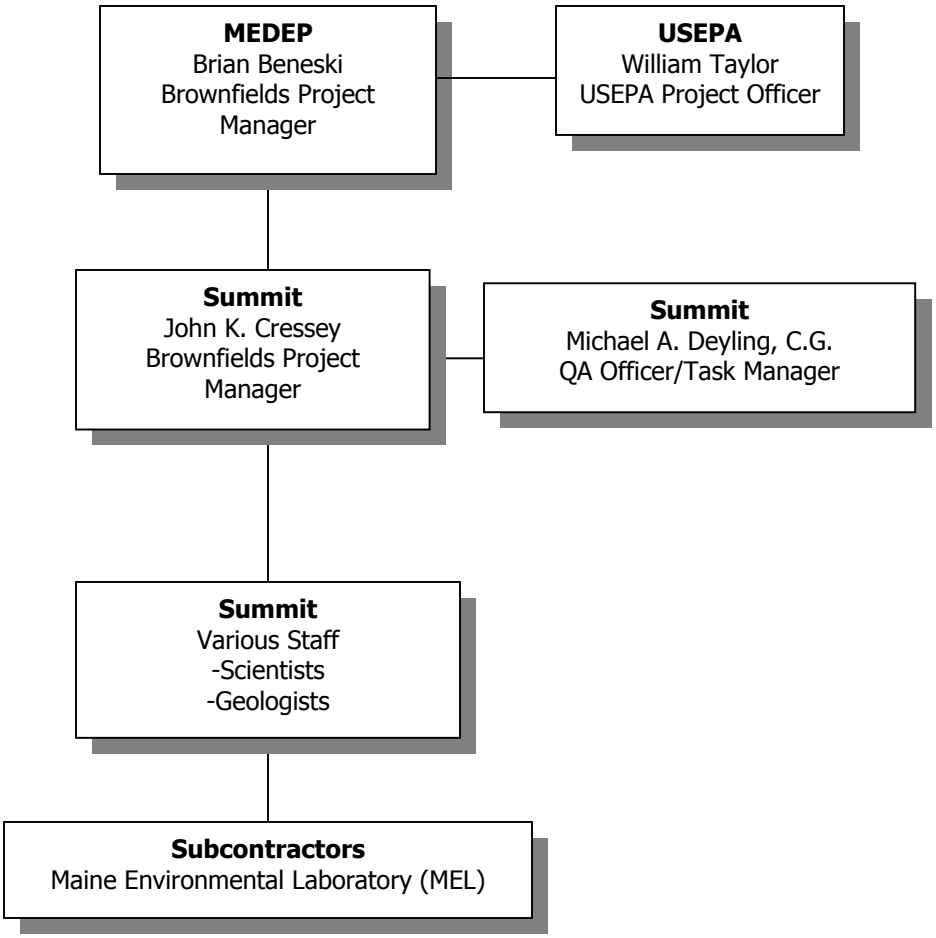
This section provides a brief description of how the 144 Montello Street Phase II Investigation project will be organized, including identification of the key project personnel, their responsibilities, and a flow chart showing the project chain of command.

Figure 2-1 is a Project Organization Chart depicting the agencies and companies involved with this project. Table 2-1 describes each participant's role in this project.

TABLE 2-1
PROJECT PERSONNEL RESPONSIBILITIES

NAME	TITLE	ORGANIZATIONAL AFFILIATION	RESPONSIBILITIES
Brian Beneski	Brownfields Project Manager	Maine Department of Environmental Protection (MEDEP)	Provides technical oversight.
William Taylor	Project Officer	United States Environmental Protection Agency (USEPA)	Oversees and approves project-wide Quality Assurance Project Plan (QAPP), Site-specific QAPPs (SSQAPPs), and general project modifications.
John Cressey	Brownfields Project Manager	Summit Environmental Consultants, Inc. (Summit)	Provides overall technical and project direction for Summit.
Michael Deyling	QA Officer	Summit	Provides project quality assurance oversight.
Michael Deyling	Task Manager/Field Lead	Summit	Day-to-day technical lead in charge of field work; coordinates and conducts data collection; participates in data interpretation and preparation of deliverables; communicates and coordinates with subcontractors.
Field Staff	Scientists/Geologists	Summit	Conducts field activities with oversight from Project Manager/Task Manager; oversee subcontractor field activities; communicates and coordinates with Project Manager.

Figure 2-1: Project Organization Chart



2.0 SCOPE OF WORK

This document is an addendum to the October 11, 2005 QAPP (RFA 05353) prepared for the MEDEP Municipal Brownfield program. This Site Specific Quality Assurance Project Plan (SSQAPP) presents the sampling strategy, sample locations, analytical methods, and schedule for the site investigation to be conducted at the 144 Montello Street property in Lewiston, Maine (the Site). The quality assurance/quality control (QA/QC) requirements contained in the original QAPP will be followed relative to sample collection, handling and analysis including chain of custody, data management and documentation, data validation, and data usability assessments. Field and lab Standard Operating Procedures (SOPs) are included in the generic QAPP.

This SSQAPP addressed a proposed a scope of work only and as such locations may vary depending upon findings during the investigation.

2.1 PROJECT DESCRIPTION AND BACKGROUND

The MEDEP received a USEPA Brownfields Assessment Grant to conduct an environmental investigations across the State. This Investigation is designed to fill data gaps present from past investigations at the Site. This investigation will include the completion of a Phase II report, and development of cleanup (if required) and reuse options for the site.

The Site consists of an approximately 0.86 acre portion of an undeveloped parcel located at 144 Montello Street in Lewiston, Maine. The City of Lewiston Tax Assessor identifies the Site as a portion of Lot 25 on Map 143. The Site is located on the north side of Montello Street in Lewiston, Maine.

The United States Geological Survey (USGS) Lewiston, Maine 7.5 Minute Topographic Quadrangle Map, which includes the Site and surrounding properties, shows that the Site is at an approximate elevation of 232 feet above mean sea level (Figure 3-1). Review of this map shows that the regional topography is relatively flat, but generally slopes downward to the northeast towards an unnamed stream, which runs through the northeast corner of the Site.

Site History

Based upon observed conditions at the Site, discussions with persons familiar with the Site, and historical documents available for review, it appears that the Site has historically been privately owned undeveloped land.

Summit, during the Phase I Environmental Site Assessment (ESA) identified Complaint Reports filed with the City of Lewiston Code Enforcement Office with two Notices of Violations dated April 12, 1994 and July 15, 1998 for the parent parcel. Summit conducted an interview with David R. Hediger, Deputy Director/City Planner for Planning & Code Enforcement of the City of Lewiston who has knowledge of the Site. Mr. Hediger stated that there has been dumping on the parent parcel in the past; however, the July 15, 1998 violation took place on a section of the parcel which is now 328 Central Avenue and does not abut the Site.

The Notice of Violation dated April 12, 1994, issued by the City of Lewiston, cites then owner, Roscoe H. Fales, for depositing approximately one thousand five hundred cubic yards of fill on his property located at 146 to 154 Montello Street. Mr. Fales received the violation for depositing the fill without first obtaining a "Development Review" for earth moving, removal, grading or fill activities which involve more than one thousand cubic yards of fill material that is not associated with a building construction project. Mr. Fales was further cited for altering the

contours of a drainageway without first obtaining an alteration permit from the Building Inspector. Mr. Fales was instructed to cease all earth moving, grading, and filling activities and install silt fencing and/or staked hay bales along the entire perimeter base of all exposed fill material and re-establish the drainageway located at the rear of the parent parcel.

Summit also reviewed an affidavit in connection with the Notice of Violation dated April 18, 1994. The affidavit was of Mr. Roscoe H. Fales, then owner of the Site, and Chuck R. Starbird, owner of the excavation company responsible for depositing the fill on the property, stating that with Mr. Fales' permission, Mr. Starbird dumped an unknown quantity of fill from the excavation of a cellar hole located at about 197-199 Central Avenue in Lewiston for the construction of a new home. Mr. Starbird states that he dumped the material on top of existing fill, which according to Mr. Fales, was possibly deposited on the property in 1988 from excavations at the site of the Bates College field house on the southeasterly side of Central Avenue; and from excavation on College Street in Lewiston when the telephone company installed underground cables. Mr. Fales further states that he believes that there were other sources of fill, but it has been a number of years since the fill was deposited and he did not recall the sources.

Summit could not verify that the violation dated April 12, 1994 was associated with the portion of the Site surveyed for the Phase I ESA; however, silt fence was located along the northern perimeter of the Site and there was an approximate three foot elevation difference from where the silt fence was installed along the northern perimeter of the Site and the remainder of the Site, which may indicate past filling activities. Due to the unknown source of past fill activities on the Site, further investigation was deemed to be required if future plans would require excavation of filled areas.

2.2 PREVIOUS INVESTIGATIONS

Several investigations have been conducted previously on this site. Table 3-1 describes the type of investigation, date, and contractor.

Table 3-1: Summary of Previous Investigations

Type of Investigation	Contractor Conducting Investigation	Date of Investigation	Field Work Completed
Phase I ESA	Summit Environmental	April 2009	Site Visit
Limited Test Pit Investigation	Summit Environmental	July 6, 2009	Site Visit, Field Screening of Soils
Phase II ESA	Summit Environmental	July 23, 2009	Site Visit, Laboratory Analytical of Soil Samples

Phase I ESA – 2009

During the Phase I ESA, one Recognized Environmental Condition (REC) was identified as fill materials had been brought to the Site from unknown sources and placed along the southern border. Due to the presence of this REC a limited test pit investigation was recommended to the property owner.

The MEDEP has reviewed and agreed with this REC.

Limited Test Pit Investigation – July 6, 2009

Summit excavated five test pits at the Site to identify the composition and extent of fill material on the Site. The five test pits were located within what is believed to be the fill area.

Each test pit was excavated to native soil. The soils encountered in TP-1 through TP-5 appear to be primarily earthen material (brown silty-sand, gravel and clay) with minor amounts (i.e. several small pieces) of asphalt found in TP-2, TP-3 and TP-4. Fill thickness ranged from 3.5 feet in TP-2 to 6 feet in TP-4.

In each location, Summit collected two soil samples. Summit field screened soil samples for the presence of total organic vapors (TOVs) using a photoionization detector (PID) equipped with a 10.6 eV probe. The PID was calibrated for 100 parts per million (ppm) isobutylene in accordance with the manufacturer's specifications. Hazardous materials and/or petroleum products (e.g., odors, stains, sheens) were not noted in any of the test pits.

Test Pit (TP) #1 exhibited the highest PID reading of 27.3 parts per million (ppm). PID responses in the remaining test pits ranged from 0.6 ppm to 16.1 ppm.

Based upon the results of this investigation, a recommendation to collect samples for laboratory analysis from the areas to be excavated for site structures be completed.

Phase II ESA – July 23, 2009

On July 23, 2009 Summit oversaw the completion of seven test pits (TP-1 through TP-7) by G.M. Morin Enterprises, a local contractor, located within the footprint of the proposed Site building and proposed parking area. In each location Summit collected soil samples at approximately 1.5 feet and 3.5 feet and field screened them for the presence of TOVs using a PID. Soil samples for laboratory analysis were collected from TP-2, TP-3, TP-5, and TP-6 for

volatile organic compounds (VOCs), semivolatile organic Compounds (SVOCs), and the eight resource conservation and recovery act (RCRA) metals.

Each Soil sample result from TP-2, 3, 5 and 6 reported at least "estimated concentrations" of Polyaromatic Hydrocarbons (PAHs) associated with coal ash/tar type residue or other combustible residue. Results also indicated PAH concentrations near the MEDEP Remedial Action Guideline values in several test pits.

Minor amounts of asphalt were observed in TP-2, 3 and 4. Summit estimated that approximately 2,800 cubic yards of fill has been placed on the Site.

This investigation is designed to assess the magnitude and extent of PAHs in fill material, and recommend corrective action(s), if necessary.

2.3 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) are qualitative and quantitative statements that specify the quality and quantity of data needed to support decisions during site assessments. DQOs are developed by considering the purpose of collecting the data and the intended use of the data.

The objective of the 144 Montello Street investigation is to collect sufficient data to evaluate the potential for impacted fill materials to be present on other areas of the property not previously investigated. Based upon the results of this assessment a soil management plan will be developed for the site to assist the property owner in managing the on-site materials. The data collected will be compared to risk-based standards and screening criteria to evaluate potential risk to human health and the environment.

A summary of data quality objectives that have been developed to meet the goals of this Site investigation are provided in **Table 3-2**. Data quality assessments are discussed in Section 9 of the Project QAPP.

TABLE 3-2
SUMMARY OF DATA QUALITY OBJECTIVES

MATRIX	PARAMETER	METHODS	STATE OR FEDERAL STANDARD	ANALYTICAL LEVEL [1]	DATA EVALUATION TIER[2]	INTENDED DATA USE [3]
Field Parameters						
Soil	Total VOCs	Handheld PID Meter	None	Level I	NA	FS, HS, ID
Off-Site Laboratory Analysis						
Soil	PAHs	USEPA Method 8270	RAGs/PRGs[4/5]	Level II	Modified Tier I	ID, CC, IR, FA, HS, FS

NOTES:

1) Analytical levels (USEPA, October 1988) Level I, on-site field screening and measurements, use one point calibration. Level II analyses using standard laboratory QA/QC, including duplicate analyses, suitable calibration standards, sample preparation equipment, and operator training.
2) Tier levels for Region I, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses (USEPA 1996). Modified Tier 1 is described in Section 17.2 of the Project QAPP.
3) Data Intended End Use is project-specific and may include: (EA) determine need for emergency action; (ID) identify waste material/contaminants; (CC) determine quantity and levels of contamination; (IR) identify impacted targets/receptors; (SS) develop site score; (FA) document need for further action or no further action; (HS) health & safety; (FS) field screening.
4) RAG = MEDEP Remedial Action Guidelines
5) PRG = USEPA Preliminary Remediation Goals

Summit has reviewed the Practical Quantitation Limits (PQLs) for the COCs and have been able to determine that no COCs have RAGs below the lab's PQLs.

2.4 CONCEPTUAL SITE MODEL

2.4.1 Site Familiarity

Summit completed the ASTM-compliant Phase I ESA in April 2009, which included Site history research and reconnaissance to identify Contaminants of Concern (COCs) and to target proposed investigations. In addition, in July 2009, Summit completed a test pit investigation and a limited Phase II ESA on behalf of the site owner.

The Phase I ESA served as the basis for development of our conceptual model for the Site. **Table 3-3** provides a summary of key Conceptual Site Model Elements.

2.4.2 Site Geology and Hydrogeology

The United States Geological Survey (USGS) Lewiston, Maine 7.5 Minute Topographic Quadrangle Map, which includes the Site and surrounding properties, shows that the Site is at an approximate elevation of 232 feet above mean sea level (Figure 3-1). Review of this map shows that the regional topography is relatively flat, but generally slopes downward to the northeast towards an unnamed drainage, which runs through the northeast corner of the Site.

The Surficial Geologic Map Maine (Osberg et al. 1985) indicates that glacial till deposits consisting of sand, silt clay, and stones underlie the Site.

According to the Maine Drinking Water Program, Public Water Resource Information System, the Site is not underlain by a mapped significant sand or gravel aquifer. The nearest mapped significant sand or gravel aquifer is located approximately 1.5 miles to the north of the Site. Based upon the USGS topographical map for the Site and surrounding area, groundwater flow is inferred to be generally to the northwest toward Stetson Brook.

Based on the above conditions PAHs that may have been present in fill placed at the Site are anticipated to move along the ground surface (dust, sediment in stormwater) and/or infiltrate (via leaching) to groundwater and discharge to the unnamed drainage to the northwest. Less mobile contaminants (for example dilute concentrations of heavy oils) could be retarded in finer grained overburden.

2.4.3 Sampling Objective

This phase of the work will focus on filling data gaps from the two previous investigations at the Site.

<u>Subsurface Soils</u>

Based upon the previous investigations, it is known that off-site soils (fill), including asphalt have been placed on the site. The previous investigations sampled for the presence of VOCs, metals, and SVOCs, with only SVOCs being detected. The fill may contain PAHs from possible disposal of coal ash or other combustion residue.

Potential exposure routes associated with the COCs within the fill include direct contact with impacted soils and ingestion of contaminated dust, particularly during any construction activity at the Site.

Based upon this soil sampling, a soil management plan will be developed in conjunction with a Voluntary Response Action Program application to the MEDEP.

TABLE 3-3
SITE CONCEPTUAL MODEL SUMMARY

SAMPLING AREA	CONTAMINANTS OF CONCERN	POTENTIAL MEDIA AFFECTED	POTENTIAL EXPOSURE ROUTES	POTENTIAL MIGRATION PATHWAYS	RECEPTORS
Site wide	PAHs	Soil	Exposure pathways for contaminants in soil: • Dermal contact with impacted soils, • Ingestion of particles via dirty hands or dust, and • Inhalation of airborne dust particles.	Migration pathways for contaminants in soil: • Physical transport as contaminants are sorbed onto soil particles, • Stormwater runoff, and • Dust particles.	Potential receptors of contamination include humans and the environment. Potential human receptors include future site workers/employees, trespassers, and transient site visitors.

2.5 SAMPLING PLAN

Based on the findings of the Phase I and limited Phase II ESAs, a sampling program has been developed to investigate potential soil contamination at the Site and to attempt to delineate potential source areas. A summary of the investigation, including sampling locations, media to be sampled and analytical program is included in **Table 3-4**; sampling locations are shown on **Figure 3-2**. These sampling locations will serve to detect potential contamination from disposal of fill materials. Standard operating procedures for this project are listed in **Table 3-5**, and are included in the Project QAPP. Field quality control samples to be collected for this project are described in **Table 3-6**. **Table 3-7** presents the sample analysis requirements, including analyses to be performed, required sample volumes, containers, and preservation, and maximum holding times. Refer to Section 11 of the Project QAPP for field document control procedures. The scope of work to meet the objectives of the sampling plan is detailed below.

2.5.1 Dig Safe Clearance and Site Health & Safety Plan

Summit will premark investigation locations and contact Dig Safe for utility clearance. A Site-specific health & safety plan (HASP) will be developed for the proposed Site investigation.

2.5.2 Field Screening—Soil Samples

Soil samples collected from test pits will be field screened for total VOCs using a photoionization detector (PID). During field screening, soil sample concentrations will be considered "elevated" if they are outside the range of the background samples.

2.5.3 Background Sampling

At least one background soil sample (BK-SS-1) will be completed using a hand trowel or shovel. The background soil sample location will be selected based on areas not expected to be impacted by past Site activities. The soil samples will be field-screened with a PID in accordance with *SOP S9* in the Project QAPP. The soil sample will be submitted to an off-site laboratory for PAHs for comparison purposes with on-site samples.

2.5.4 Test Pit Exploration

Up to four test pits (TP-01 through TP-04; see Figure 3-2) will be excavated on the central portion of the Site. The locations were selected based on past investigations and to provide greater site coverage for possible contamination areas. Soil sampling will be conducted at the surface and at one-foot intervals to approximately the top of the groundwater table. Soils will be field screened with a PID in accordance with *SOP S9* in the Project QAPP. A minimum of four soil samples (one from each test pit) will be collected and submitted to an off-site laboratory for PAH analysis. If PID screening or visual observations of soil indicate staining and/or elevated PID readings above background levels, additional soil samples may be collected for the same parameter. Table 3-4 provides a summary of the proposed sampling program by media and analyte.

2.5.5 Sample Management

Samples will be collected and managed as described in the associated SOPs referenced above. Sample preservation requirements are listed in **Table 3-7.**

2.5.6 Equipment Decontamination and Management of Investigation Derived Waste (IDW)

Decontamination procedures are described in *SOP S13*. IDW will be managed as follows:

- Any excess soil generated during sampling will be backfilled.

2.5.7 Reporting

A report will be completed as described in the Project QAPP. The report will include the following items:

1. Tabular analytical results reported above laboratory detection limits for compounds analyzed (analytes exceeding regulatory standards will be in bold face type).
2. A map showing sampling locations and location of Site features.
3. A discussion of deviations from the approved QAPP and the effect on data usability, if any.
4. Recommendations for additional work, if necessary, and justifications based upon data quality objectives and the conceptual site model.

TABLE 3-4
SUMMARY OF SITE INVESTIGATION

AOC	SAMPLE LOCATION/ SOURCE AREA (1)	TASK/MEDIA	SAMPLE IDS	DEPTH OF SAMPLE	ANALYTICAL PARAMETER	NUMBER OF LAB SAMPLES(2)	NUMBER OF DUPLICATES	RATIONALE	FIELD ANALYSES/ OBSERVATIONS
Sitewide	Test Pit Investigation	Subsurface Soil	SS-02-SS-04	0-6 feet	PAHs	4	1	To assess subsurface soil conditions in the area not previously investigated	PID Field-Screening Visual Observations
Background	Off-Site, Upgradient locations	Soil Investigation	BK-SS-01	0 to 2 feet	PAHs	1	0	To assess background soil quality	PID Field-Screening, Visual Observations

(1) See Figure 3-2 for proposed sampling locations.
(2) If field-screening finds VOC concentrations, additional laboratory samples may be collected and submitted for VOC testing, as appropriate.

TABLE 3-5
PROJECT SAMPLING SOPS REFERENCE TABLE

SOP REFERENCE NUMBER	TITLE, REVISION DATE AND/OR NUMBER	ORIGINATING ORGANIZATION
S6	Soil Sampling Protocol, SOP: DR#006, Rev. 5, January 25, 1999.	MEDEP
S9	Field Screening of Soil Samples Utilizing the Jar Headspace Technique, SOP: DR#011, Rev. 1, January 21, 1999.	MEDEP
S10	Chain of Custody Protocol, SOP: DR# 012, Rev. 4, January 26, 1999.	MEDEP
S11	Documentation of Field Notes and Development of a Sampling Event Trip Report, SOP: DR# 013, Rev. 3, May 13, 1999.	MEDEP
S13	Decontamination Procedures Protocol, SOP: DR#017, Rev. 2, January 22, 1999.	MEDEP
S14	Protocol for the Use of the Foxboro Model TVA-1000B Toxic Vapor Analyzer, SOP: DR#019, Rev. 1, February, 25, 2002.	MEDEP
S20	Standard Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process; ASTM Designation E1903-97; approved December 10, 1997.	American Society for Testing and Materials

TABLE 3-6
FIELD QUALITY CONTROL SAMPLES

QC SAMPLE	FREQUENCY	ACCEPTANCE CRITERIA	CORRECTIVE ACTION
Soil, groundwater: field duplicate	1 per 20 samples collected, per media (minimum of one/event)	Per USEPA data evaluation guidelines for comparison of field duplicates	Compare for resampling or reanalysis

Table 3-7
Sampling and Analysis Methods Requirements

Medium/Matrix	Analytical Parameter	Sampling SOP	Number of Samples	Analytical Method	Sample Volume	Containers (Number, size and type)	Preservation Requirements (chemical, temperature)	Maximum Holding Time (preparation/ analysis)
Soil	PAHs	S6	See Table 3-4	8270C	100 g	4 oz glass jar	4°C	14 days to extraction; 40 days to analysis